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EXAMINER	
TSEGAYE, SABA	

ART UNIT	PAPER NUMBER
2419	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/084,043	KWAK, JOSEPH A.	
	Examiner	Art Unit	
	SABA TSEGAYE	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to amendment filed 09/03/08. Claims 1-6 and 10 are pending. Currently no claims are in condition for allowance.

Double Patenting

2. Claims 1-6 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 7,149,192. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-6 of the instant application merely broadens the scope of the claims 1-6 of the patent No, 7, 149,192 by eliminating the elements and their functions of the claims. It has been held that the omission and element and its function is an obvious expedient if the remaining elements perform the same function as before. *In re Karlson*, 136 USPQ 184 (CCPA. Also note *Ex parte Rainu*, 168 USPQ 375 (Bd. App. 1969); omission of a reference element whose function is not needed would be obvious to one skilled in the art.

Claim Rejections - 35 USC § 103

3. Claims 1, 2, 5, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm et al. (US 6,208,663) in view of Malkamaki et al. (US 6,735,180), Cheng et al. (US 2002/0191544 A1) and Yonge III et al. (US 6,522,650).

Regarding claims 1 and 10, Schramm discloses, in Figs. 3 and 5, a method for adjusting data modulation at base station comprising:

receiving data at a transmitter for transmission (*a radio base stations 22; column 5, lines 59-65, where an LLC frame is received at the transmitter for transmission*);

formatting the received data into packets for transmission, the packet being smaller in size than the data blocks, and each packet having a particular encoding/data modulation (*a radio base stations 22; where the LLC is formatted into RLC blocks, where the modulation scheme for transmission of and RLC block changes depending on the circumstances; Fig. 4(a) and column 5, lines 59-65*);

appending the error check sequences (*see fig. 4; BCS (block check sequence*); column 3, lines 16-18) transmitting the packets (column 5, lines 25-45);

storing the packets for retransmission in a buffer memory incorporated into the transmitter (*column 7, lines 14-20, where retrieving the FEC encoded block identified in a negative ARQ acknowledgement from* ***storage****, indicates that the packets are stored for retransmission in a memory in the transmitter*);

monitoring a return channel for receipt of acknowledgment for reach packet that the packet has been received (column 7, lines 39-53; column 8, lines 37-42);

retransmitting an original or selectively modified packet at the transmitter (*where retrieve the FEC encoded block identified in a negative ARQ acknowledgement from storage, such that selectively modified packet is retransmitted; column 7, lines 14-27*) in response to failure to receive a corresponding acknowledgement for a given packet (*retransmission is sent upon receipt of a negative ARQ (according well known ARQ routines, column 6, lines 60-67*) see also column 5, lines 59-62; column 10, lines 45-49);

receiving and demodulating received packets at a receiver (column 5, lines 46-50; column 7, lines 54-58);

receiving a corresponding acknowledgement for a given packet (column 6, lines 60-67; column 10, lines 45-49);

collecting retransmission statistics and adjusting the particular data/modulation using the collected statistics at an adaptive modulation and coding controller (*column 7, lines 6-9; where the transmitter counts the number of requests for retransmitted blocks*);

buffering, decoding, and detecting packet errors at combiner/decoder (column 6, lines 60-67);

generating an acknowledgement for each received packet if that packet has an acceptable error rate in an acknowledgment generator (*mobile station signal to the transmitter using well known ARQ routine*).

Further, Schramm discloses that the ARQ protocol is the RLC layer. An LLC frame to be transmitted by RBS is segmented into RLC blocks then transmitting the blocks to the mobile station through the physical layer (*data is received from a higher layer ARQ mechanism*).

Schramm does not disclose a physical layer ARQ mechanism that comprises a physical layer ARQ transmitter operates transparently with respect to the higher layer ARQ mechanism and a mechanism configured to receive the corresponding acknowledgment for the given packet operates transparently with respect to the higher layer ARQ mechanism.

Malkamaki teaches a fast feedback scheme for a fast physical layer hybrid ARQ for data transmitted in the downlink direction. Further, Malkamaki teaches that one way to speed up the whole process is to generate the feedback data in physical layer of the receiver. Similarly of the

transmissions should be generated at the physical layer of the transmitter. Alternatively, the feedback and the retransmission can also be generated in a layer, which is co-located with the physical layer (column 1, lines 54-60).

Cheng teaches a dual layer ARQ scheme where a physical layer ARQ mechanism is transparent to the higher layer ARQ mechanism (paragraphs 0042-0043).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Schramm's ARQ method to incorporate the teachings from Malkamaki of a physical layer ARQ mechanism and a physical layer ARQ mechanism that is transparent to the higher layer ARQ from Cheng, the motivation being that the ARQ system will be more reliable by eliminating any long delay between the higher layer and the physical layer and reduce implementation complexity (see Cheng 0043).

Schramm, further, teaches that a copy of the FEC coded blocks is stored by the transmitting entity prior to modulation. If retransmission is requested for a particular block, that block can be retrieved from storage and fed into a different modulator (column 6, lines 4-11). Malkamaki, also, teaches that the sender must store and packet for possible retransmission unit such time that the sender receives acknowledgment form the receiver that the packet has been received properly (column 3, line 63-column 4, line 7). However, Schramm in view of Malkamaki and Cheng does not expressly disclose limiting the number of retransmissions to an operator-defined integer value, and clearing the buffer memory after the integer value is reached.

Yonge illustrates, in Figs. 23 and 24, flow diagrams of a response resolve process performed by the frame transmit process of TX handler. Further, Yonge teaches that process 444 determines if the NACK-count is greater than the NACK-count threshold (in this example, a

threshold of 4). If the NACK-count is determined to be greater than the threshold of 4, then the frame is discarded (column 26, line 6o-column 27, line 41, esp. column 27, lines 13-22).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to add a retransmission counter that limits the number of retransmissions to an operator defined integer value and clears the buffer memory after the integer value is reached, such as that suggested by Yonge, in the retransmission system of Schramm in view of Malkamaki, and Cheng in order to reduce implementation complexity and to reduce the number of retransmission times thereby the transmission quality in real-time transmission is improved.

Regarding claim 2, Schramm discloses the method wherein the particular encoding/data modulation is forward error correction FEC encoding/data modulation (column 7, line 54-column 8, line 11).

Regarding claim 5, Schramm discloses the method wherein the acknowledgments are transmitted on the fast feedback channel using a CDMA air interface (column 4, lines 49-56).

Regarding claim 6, Schramm discloses the method further comprising transmitting a negative acknowledgment, if that packet has an unacceptable error rate (column 7, lines 39-45).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm in view of Malkamaki, Cheng and Yong as applied to claim 1 above, and further in view of Agee (US 6,128,276).

Schramm in view of Malkamaki, Cheng and Yong discloses all the claim limitations as stated above except for: the packets are transmitted using an OFDMA air interface in which frequency sub channels in an OFDMA set may be selectively nulled.

Agee teaches a radio communication method that is compatible with discrete multiple tone and orthogonal frequency-division multiplex-like frequency channelization techniques (column 4, linel9-column 5, line 40).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to add a method that transmit packets using an OFDMA air interface, such as that suggested by Agee, in the method of Schramm in view of Malkamaki, Cheng and Yong in order to allow stationary and linear channel distortion to be modeled as an exactly multiplicative effect on the transmit spreading code.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm in view of Malkamaki, Cheng and Yong as applied to claim 1 above, and further in view of Birru (US 2002/0037058).

Schramm in view of Malkamaki, Cheng and Yong discloses all the claim limitations as stated above. Further, Schramm discloses that the invention is applied to all types of access methodologies including FDMA, TDMA, CDMA and hybrids thereof. However, Schramm in view of Malkamaki, Cheng and Yong does not expressly discloses wherein the packet are transmitted using a single carrier having a frequency domain equalization (SC-FDE) air interface.

Birru teaches that a multi-standard demodulator, which includes COFDM, a frequency domain equalizer for single carrier results in a cost-effective solution compared to a time domain equalizer.

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use SC-FDE, such as that suggested by Birru, in the multi-access methodologies of Schramm in view of Malkamaki, Cheng and Yong in order to provide cost effectiveness and multi-path performance (0059).

Response to Arguments

6. Applicant's arguments filed 09/03/08 have been fully considered but they are not persuasive. Applicant argues that Schramm, Malkamaki, Cheng, and Yonge do not discloses "formatting the received data blocks into packets for transmission the packets being smaller in size than the data blocks, and each packet having a forward error correction (FEC) type." or "receiving and demodulating received packets at a physical layer receiver" as are recited in the Applicant's amended independent claim 1. Examiner respectfully disagrees. As shown in fig. 4a, Schramm clearly discloses that frame to be transmitted by RBS 22 is segmented into blocks (column 6, lines 45-48). Further, Schramm clearly discloses that system 10 supports plural modulation schemes and plurality of FEC coding scheme (column 5, lines 65-67). In addition, Schramm discloses that retransmission techniques can be provided in system 10 so that a receiving entity (RBS 22 or MS 12) can request retransmission of an RLC block from a transmitting entity (MS 12 or RBS 22). Both transmitting and receiving entities need to know what communication of REC coding and/or modulation schemes are being used for retransmitted

blocks in order to properly demodulate and decode the received information (column 5, lines 46-50; column 7, lines 54-58). This shows that both (RBS 22 and MS 12) able to receive and demodulate received packets. Malkamaki teaches a fast feedback scheme for a fast physical layer hybrid ARQ for data transmitted in the downlink direction **at a physical layer receiver**.

Regarding claim 10, Applicant argues that Schramm, Malkamaki, Cheng, and Yonge do not discloses "wherein the physical layer ARQ mechanism reduces retransmission required by the higher layer ARQ mechanism." Examiner respectfully disagrees. Schramm discloses that the ARQ protocol is the RLC layer. An LLC frame to be transmitted by RBS is segmented into RLC blocks then transmitting the blocks to the mobile station through the physical layer (*data is received from a higher layer ARQ mechanism*). Malkamaki teaches a fast feedback scheme for a fast physical layer hybrid ARQ for data transmitted in the downlink direction. Further, Malkamaki teaches that one way to speed up the whole process is to generate the feedback data in physical layer of the receiver. Similarly of the transmissions should be generated at the physical layer of the transmitter. Alternatively, the feedback and the retransmission can also be generated in a layer, which is co-located with the physical layer (column 1, lines 54-60). And *Cheng teaches a dual layer ARQ scheme where a physical layer ARQ mechanism is transparent to the higher layer ARQ mechanism (paragraphs 0042-0043).*

Examiner also notes that similar arguments were presented (as claim 1) regarding claim 3 and 4 on pages 9 and 10. The examiner takes the same position.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SABA TSEGAYE whose telephone number is (571)272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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12/5/08